# UNITED STATES PATENT AND TRADEMARK OFFICE

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| 09/825,139 | 04/03/2001 | David J. Wetherall | 41007.P005 | 1582 |

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| EXAMINER |
|---|
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| ART UNIT | PAPER NUMBER |
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| 2153 | |

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Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C  (Rev. 10/03)

| | Application No. | Applicant(s) |
|---|---|---|
| **Office Action Summary** | 09/825,139 | WETHERALL ET AL. |
| | Examiner | Art Unit | |
| | Yasin M. Barqadle | 2153 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on _28 March 2005_.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) _1-32_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-32_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some *   c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

## Response to Amendment

1.    The amendment filed on March 28, 2005 regarding claims 11,
and 29-32 have been fully considered but are moot in view of the
new ground(s) of rejection.

- Claims 11,14 and 22-26 have been amended.

- New claims 29-32 have been added.

- Claims 1-32 are presented for examination.

## Response to Arguments

2.    In response to Applicant's arguments in page 14, first
paragraph that "the applied reference does not show or suggest
techniques for confronting denial service attacks as claimed".
Examiner notes that "undesirable packets that are part of a
denial service attacks" are not described in the specification
in such a way as to enable one skilled. However, Examiner
contends that new reference of Canion et al shows this
limitation. See (¶ 0171; ¶ 0174-0177 and ¶ 0183-0187).
In response to Applicant's arguments in page 13, last paragraph
that "the invention of claim 1 is not described by this prior
art reference." Examiner contends that the prior art of
reference teaches the claimed invention. Specifically the steps
of independently determining whether the packet is a part of a

conversation between the client and the server based at least in

part on persistent information included in the packet. The

packet is handled based in part on the result of the independent

determination [each message or data packet transmitted between

the client and the server has a structure as shown in fig. 4,

that comprises compressed session identifier, envelope

identifier and data payload. Based on compressed session

identifier or the envelope identifier (client address and port

number, server address and port number), or both, it is

determined to which session each received packet belongs, the

packet is handled (routed or redirected to other networks) col.

4, lines 46 to col. 5, line 16 and col. 5, lines 40-67].

### *Claim Rejections - 35 USC § 112*

The following is a quotation of the first paragraph of 35

U.S.C. 112:

> The specification shall contain a written description of the invention, and
> of the manner and process of making and using it, in such full, clear,
> concise, and exact terms as to enable any person skilled in the art to
> which it pertains, or with which it is most nearly connected, to make and
> use the same and shall set forth the best mode contemplated by the inventor
> of carrying out his invention.

3.    Claims 29 and 31 are rejected under 35 U.S.C. 112, first

paragraph, as failing to comply with the written description

requirement.  The claim(s) contains subject matter which was not

described in the specification in such a way as to reasonably

convey to one skilled in the relevant art that the inventor(s),

at the time the application was filed, had possession of the

claimed invention.  "undesirable packet <u>that is part of a denial</u>

<u>of service attack</u> on the server".


4.    Claims 29 and 31 are rejected under 35 U.S.C. 112, first

paragraph, as failing to comply with the enablement requirement.

The claim(s) contains subject matter which was not described in

the specification in such a way as to enable one skilled in the

art to which it pertains, or with which it is most nearly

connected, to make and/or use the invention. "undesirable packet

<u>that is part of a denial of service attack</u>." The only time

Applicant mentions "denial of service attack" in the

specification happens to be at the end of the background of the

invention.


### Claim Rejections - 35 USC § 103


The following is a quotation of 35 U.S.C. 103(a) which

forms the basis for all obviousness rejections set forth in this

Office action:

(a) A patent may not be obtained though the invention is not identically
disclosed or described as set forth in section 102 of this title, if the
differences between the subject matter sought to be patented and the prior
art are such that the subject matter as a whole would have been obvious at
the time the invention was made to a person having ordinary skill in the
art to which said subject matter pertains.  Patentability shall not be
negatived by the manner in which the invention was made.

5.    Claims 1-3 and 10 are rejected under 35 U.S.C. 103(a) as

being unpatentable over Lin et al USPN (6269402) in view of

Primak et al USPN. (6598077).

As per claim 1, Lin et al teach a method of operation

comprising:

receiving a packet sent by a client device (102,fig.1)

destined for a server (104,fig.1)[server receives data packets

col. 3, lines 33-36];

independently determining whether said packet is a part of a

conversation between the client and the server based at least in

part on persistent information included in said packet

[determining if session identifier exists in currently active

sessions col. 4, lines 46 to col. 5, line 16 and col. 5, lines

40-67]; and

handling the packet based at least in part on the result of said

independent determination [communication activity between the

client and the server takes place based on the determined

session identifier in the packet [col. 4, lines 46 to col. 5,

line 16 and col. 5, lines 40-67].

Although Lin et al show substantial features of the claimed
invention as explained in claim 1, he does not explicitly show a
routing device.

Nonetheless, routing devices that perform content routing in a
client server network are well known in the art and would have
been an obvious modification of the system disclosed by Lin et
al, as evidenced by Primak et al USPN. (6598077).

In analogous art, Primak et al whose invention is about a system
for directing a client request (client 60, fig. 1) for dynamic
content to an application server (fig. 1, server 30), disclose a
system containing a dynamic content router (fig. 1, router 10)
that examines a session communication between client and a
server based on information (session identifier) associated with
client request [fig. 1, Col. 4, lines 17-51 and col. 6, lines 9-
53].

Giving the teaching of Primak et al, a person of ordinary skill
in the art would have readily recognized the desirability and
the advantage of modifying Lin et al by employing the dynamic
content routing system of Primak et al because it facilitates
the determining and identifying client requests containing
verifiable session IDs in order to forward the request to the
appropriate application server.

As per claim 2, Lin et al teach the invention, wherein said
independent determination comprises independently verifying a
conversation identifier included in said packet based at least
in part on other information included (compressed ID or client
address and port) in said packet [col. 4, lines 46-49 and col.
5, 11-16].


As per claim 3, Lin et al teach the invention, wherein said
independent verification comprises independently regenerating
the conversation identifier using at least said other
information included in said packet [generating a compressed
session identifier that is derived from the a. long session
identifier col. 4, lines 46-49 and col. 5, 11-16]; and

comparing the independently re-generated conversation
identifier with the included conversation identifier [searching
a database of currently active sessions to determine if it is
currently in use and which session a received packet belongs to.
Hence performing a comparing and identifying col. 4, lines 46-57
and col. 5, 2-16].

As per claim 10, Lin et al teach the method of claim 1, wherein
the method further comprises forwarding the packet to the server
if the packet is deemed to be a part of a conversation between
the client device and the server, and non-forwarding the packet

if the packet is deemed not a part of a conversation between the
client device and the server [col. 6, lines 6-44].


6.    Claims 11,17-19,22,29 and 32 rejected under 35 U.S.C.
103(a) as being unpatentable over Lin et al USPN (6269402) in
view of Primak et al USPN (6598077) and further in view of
Canion et al USPN. (20020108059).


As per claim 11 and 22, these claims include similar limitations
as explained in claim 1 above.
Lin et al further teach a method of operation comprising:
        at least one processor (102 and 104, fig. 2);
        generating an independently verifiable conversation
identifier for a packet destined for a client device, using at
least persistent information that will be included in said
packet [col.4, lines 9-20; col. 4, lines 46 to col. 5, line 16
and col. 5, lines 40-67];
        including the independently verifiable conversation
identifier with said packet for use by the client device to
include in a subsequent packet sent by the client device
destined for the server [col.4, lines 9-20; col. 4, lines 46 to
col. 5, line 16 and col. 5, lines 40-67]; and

transmitting said independently verifiable conversation
identifier included packet to said client device [col. 4, lines
9-61].

Primark et al further teach a summation unit to insert the
independently verifiable conversation identifier with a packet
[col.7, lines 63 to col. 8, lines 9 and col. 11, lines 41-56].

Although Lin et al and Primak et al show substantial features of
the claimed invention as explained in claim 1 and 11 above, they
do not explicitly show determining whether to forward or drop
the packet through a network in response to the conversation
identifier to protect the network against undesirable packets.

Nonetheless, this feature is well known in the art and
would have been an obvious modification of the system disclosed
by Lin and Primak et al, as evidenced by Canion et al USPN.
(20020108059).

In analogous art, Canion et al whose invention is about a system
for detecting incoming data packets in a network, disclose a way
of determining whether to forward or drop a packet through a
network in response to a conversation identifier (received
packet information) to protect the network against undesirable
packets (packets with potential security violations) (¶ 0174-
0177 and ¶ 0183-0187). Giving the teaching of Bull et al, a

person of ordinary skill in the art would have readily

recognized the desirability and the advantage of modifying Lin

and Primak et al by employing the intrusion detection system of

Canion et in order to identify packets with potential security

violations for the advantage of protecting the network against

network security attacks such as denial of service attacks, sync

attacks, ping attacks and unauthorized attacks (¶ 0171 and ¶

0183-0187).


As per claim 17, this claim include similar limitations as

explained in claim 1 and 11 above, Lin et al further teach:

an interface to receive a packet sent by a client device

destined for a server [fig. 2 and col. 3, lines 51-59]; and

a function unit coupled to the interface to independently

determine whether said packet is a part of a conversation

between the client and the server based at least in part on

persistent information included in the packet [fig. 2 and col.

3, lines 51-59 and col. 4, lines 46-49 and col. 5, 11-16]; and

output a packet disposition signal based at least in part

on the result of said independent determination [fig. 1; col. 4,

lines 46 to col. 5, line 16 and col. 5, lines 40-67].

As per claim 18, Lin et al teach the invention, wherein said
function unit is to designed to make said independent
determination by independently verifying a conversation
identifier included in said packet based at least in part on
other information included in said packet [col. 3, lines 51 to
col. 4, line 49 and col. 5, 11-16].

As per claim 19, this claim includes similar limitations as
claim 3 above. Therefore, it is rejected with the same
rationale.

As per claim 29, Canion et al teach the invention, wherein the
method further comprises forwarding the packet to the server if
the packet is deemed to be part of a conversation between the
client device and the server, and dropping the packet if the
packet is deemed to be an undesirable packet the is part of a
denial of service attack on the server (¶ 0174-0177 and ¶ 0183-
0187).

As per claim 32, Canion et al as modified teach the invention,
where the function unit (processing unit) drops packets that are
not part of the conversation identifier to protect the server
against receipt of undesirable packets (¶ 0174-0177 and ¶ 0183-
0187).

## Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs

of 35 U.S.C. 102 that form the basis for the rejections under

this section made in this Office action:

A person shall be entitled to a patent unless -

(e) the invention was described in a patent granted on an application for
patent by another filed in the United States before the invention thereof
by the applicant for patent, or on an international application by another
who has fulfilled the requirements of paragraphs (1), (2), and (4) of
section 371(c) of this title before the invention thereof by the applicant
for patent.

7.    Claims 14-16 and 26-28 are rejected under 35 U.S.C. 102(e)

as being anticipated by Bull et al USPN (6799270).

As per claims 14 and 26, Bull et al teach a method of operation

comprising [fig. 1]:

receiving a packet a from a server [col.4, lines 12-34];

extracting from the packet at least an independently verifiable

conversation identifier included in the packet by the server for

inclusion in a subsequent packet of the client device for the

server (col.2, lines 21-36), to allow one or more intermediate

routing devices to be able to independently determine whether to

permit continuing forwarding of the subsequent packet of the

client device to the server [col.2, lines 21-36 and col. 15,

lines 1-60]; and

saving said extracted at least independently verifiable

conversation identifier for said subsequent use [col. 2, lines

21-36 and col. 15, lines 1-60].


As per claims 15 and 27, Bull et al teach the invention, wherein

the method further comprises retrieving at least a saved

independently verifiable conversation identifier [col. 14, lines

35-67];

including the retrieved independently verifiable

conversation identifier in a packet to be sent to the server

[col. 4, lines 12-34; and

the independently verifiable conversation identifier

included packet to the server [col. 2, lines 21-36 and col. 15,

lines 1-60].


As per claims 16 and 28, Bull et al teach the invention, wherein

extracting an included nonce and an associated sequence number

of the nonce, the nonce being independently verifiable by a

party using a deterministic function and having knowledge of a

secret value, based on persistent information included in the

packet  [Col. 5, lines 9-34 and Col. 6, lines 7-65].

8.    Claims 4-9, 12-13 and 21, 23-25 rejected under 35 U.S.C.

103(a) as being unpatentable over Lin et al USPN (6269402) in

view of Bull et al USPN (6799270) and further in view of Primak

et al USPN (6598077).


As per claims 4 and 12, although Lin et al and Primak et al show

substantial features of the claimed invention as explained in

claim 1 and 11 above, they do not explicitly show a nonce.

     Nonetheless, this feature is well known in the art and

would have been an obvious modification of the system disclosed

by Lin et al, as evidenced by Bull et al USPN. (16799270).

In analogous art, Bull et al whose invention is about a system

for securely distributing session keys over a network of a chain

of nodes including client nodes (14), server nodes (18) and

intermediate nodes (18), disclose a bit string of data that

includes a nonce (randomly generated value that is concatenated

to the end of a message) that is used for identification and

verification purpose [Col. 6, lines 39-50 and col. 7, lines 21-

60]. Giving the teaching of Bull et al, a person of ordinary

skill in the art would have readily recognized the desirability

and the advantage of modifying Lin et al by employing the system

of Bull et in order to generate a unique value that identifies a

client session and to verify the integrity of the response

coming from the server [Col. 6, lines 39-50 and col. 7, lines

29-35].

Bull et al further teaches said re-generating the nonce

using a deterministic function with a sequence number of the

nonce and a plurality of persistent field values extracted from

the packet, and a pre-provided secret value as inputs to the

deterministic function [Col. 5, lines 9-34 and Col. 6, lines 7-

65].

As per claims 5, 13 and 24, Lin et al teach the invention,

wherein said plurality of persistent field values comprise one

or more of a source address, a destination address and a port

number [col. 5, 2-7].

As per claim 6, Bull et al further teach the invention as

explained in claim 4 above, wherein the method further comprises

at least one of receiving into said routing device said secret

value, and equipping/configuring said routing device with said

deterministic function [Col. 5, lines 9-34 and Col. 6, lines 7-

65].

As per claim 7 and 25, Bull et al further teaches the invention,

wherein said independent generation is performed using a

selected one of a message authentication code function and an
universal hash function [col. 5, lines 39 to Col. 6, lines 7-
47].

As per claim 8, Primark et al as modified teach the invention,
wherein the method further comprises recording a time of first
observation for the nonce if the nonce is a newly observed nonce
[col. 9, lines 20-67].

As per claim 9, Primark et al as modified teach the invention,
wherein the method further comprises determining if time has
elapsed more than a predetermined threshold since a time of
first observation was recorded for the nonce, if the extracted
nonce and the independently generated nonce are deemed to be the
same [col. 9, lines 20-67].

As per claims 20-21 and 23, these claims include similar
limitations as claim 4 and 12 above. Therefore, they are
rejected with the same rationale.

9.    Claims 30 and 31 are rejected under 35 U.S.C. 103(a) as
being unpatentable over Bull et al USPN (6799270) in view of
Canion et al USPN. (20020108059).

As per claims 30 and 31, Although Bull et al shows substantial

features of the claimed invention as explained in claims 14 and

26 above, he does not explicitly show dropping a packet through

a network in response to a conversation identifier to protect

the network against undesirable packets that is part of a denial

of service attack

Nonetheless, this feature is well known in the art and

would have been an obvious modification of the system disclosed

by Bull et al, as evidenced by Canion et al USPN. (20020108059).

In analogous art, Canion et al whose invention is about a system

for detecting incoming data packets in a network, disclose a way

of dropping (discarding) a packet through a network in response

to a conversation identifier (packet information) to protect the

network against undesirable packets that is part of a denial of

service attack (¶ 0174-0177 and ¶ 0183-0187). Giving the

teaching of Bull et al, a person of ordinary skill in the art

would have readily recognized the desirability and the advantage

of modifying Lin and Primak et al by employing the intrusion

detection system of Canion et in order to identify packets with

potential security violations for the advantage of protecting

the network against network security attacks such as denial of

service attacks, sync attacks, ping attacks and unauthorized

attacks (¶ 0171 and ¶ 0183-0187).

## Conclusion

10.  **ACTION IS MADE FINAL.**  See MPEP § 706.07(a).  Applicant is

reminded of the extension of time policy as set forth in 37

CFR 1.136(a).

A shortened statutory period for reply to this final action

is set to expire **THREE MONTHS** from the mailing date of this

action.  In the event a first reply is filed within **TWO MONTHS**

of the mailing date of this final action and the advisory action

is not mailed until after the end of the **THREE-MONTH** shortened

statutory period, then the shortened statutory period will

expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated

from the mailing date of the advisory action.  In no event,

however, will the statutory period for reply expire later than

**SIX MONTHS** from the date of this final action.

The prior made of record and not relied upon is considered

pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier

communications from the examiner should be directed to Yasin

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Barqadle whose telephone number is 571-272-3947.  The examiner

can normally be reached on 9:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are

unsuccessful, the examiner's supervisor, Glenn Burgess can be

reached on 571-272-3949.  The fax phone numbers for the

organization where this application or proceeding is assigned

are 703-872-9306 for regular communications and 703-746-7238 for

After Final communications.

Any inquiry of a general nature or relating to the status

of this application or proceeding should be directed to the

receptionist whose telephone number is 703-305-3900.

Information regarding the status of an application may be

obtained form the Patent Application Information Retrieval

(PAIR) system. Status information for published applications may

be obtained from either private PAIR or public PAIR system.

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system, see http://pair-direct.uspto.gov. Should you have

questions on access to the Private PAIR system, contact the

Electronic Business Center (EBC) at 866-217-9197 (toll-free).

YB

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